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Wearable non-invasive epidermal glucose sensors: A review^{*}

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Abstract:

The growing recent interest in wearable and mobile technologies has led to increased research efforts toward development of non-invasive glucose monitoring platforms. Continuous glucose monitoring addresses the limitations of finger-stick blood testing and provides the opportunity for optimal therapeutic interventions. This article reviews recent advances and challenges toward the development of non-invasive epidermal electrochemical glucose sensing systems. Recent reports claim success in glucose monitoring in human subjects using skin-worn electrochemical sensors. Such epidermal electrochemical biosensors obviate the disadvantages of minimally-invasive subcutaneous glucose biosensors and offer promise for improved glycemic control. The ability of such systems to monitor glucose non-invasively offers an attractive route toward advancing the management of diabetes and achieving improved glycemic control. However, realizing the potential diagnostic impact of these new epidermal sensing strategies would require extensive efforts toward addressing key technological challenges and establishing a reliable correlation to gold standard blood glucose meters.

Graphical abstract

^{*} In celebration of Gary Christian 80th Birthday!

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